System Coordination Office's "Best Management Practices" For Incorporating Data Management Into IT Projects

November 30, 2001

Version 1.0

United States Department of Interior
Bureau of Land Management
System Coordination Office
WO-570D
Denver Federal Center
Denver, Colorado 80225

Change Log

Date	Change Description	Pages Affected	Initials
03/2001	Initial Release in Word Perfect format	All	BB
11/30/2001	-Format changed to Word -Major changes in the Select Phase and Appendicies	All	BB

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1.0 Purpose

This document provides project managers with uniform requirements and specific instructions relating to data requirements for each phase and stage of the project. These existing guidelines may change as experience is gained and the process undergoes continuous process improvement and/or through guidance issued as the Data Management Plan 2001 is implemented.

The System Coordination Office (SCO) WO-570D, has developed a set of "best management practices" that provide project managers with guidance improving overall project management within the Bureau. This guide is part of the overall set.

2.0 Applicability

These guidelines apply to all projects.

3.0 Management Objective

The objective is to establish a standardized, repeatable process for good data management practices. This includes working with the business owners to develop data requirements for their business case and project plans, establishing the data criteria for each phase of the project, and documenting all national systems via the Corporate Metadata Repository (CMR). The CMR documentation requirements are listed at Appendix 4.

4.0 Data Requirements for Projects

4.1 Select Phase – Investment Proposal Stage

Contact the Data Management staff (WO570D) to assist in the development of a preliminary data impact analysis (see Appendix 1) that identifies data areas that may be impacted by the proposal and to begin to identify the data costs and benefits.

4.2 Select Phase - Business Case Development Stage

1. Identify each high-level data group (for example customer, land status) that the project is expected to use from the Bureau High Level Data Groups identified in the Bureau Architecture (see Appendix 2). If the data group is not in the Bureau Architecture, describe it and justify why it should be added to the Architecture. The justification should include a description of how this data helps the Bureau fulfill its mission. Refer to the BLM Mission Strategic Plan and the information requirements identified in that plan.

2. Identify the source of data to be used by the system (e.g., CBS or Master Name are two of the possible sources for Customer data) and indicate if the data is automated or non-automated.

3. Describe any data sharing that is to take place with the customers, internal and external.

4. Identify the data steward(s) involved.

5. Identify if data standards exist or if they will be developed (e.g., Fish & Wildlife standards; standards will be developed in-house).

6. Identify data management costs and benefits for the Return on Investment (ROI).

4.2 Select Phase – Acquisition Plan Development Stage

Begin development of the Acquisition Plan. (Template to be developed.)

4.4 Select Phase - Project Plan Development and Review Stage

Begin development of the Data Management Plan. (Template to be developed.)

4.5 Control Phase - Project Definition Stage

1. Provide a high-level entity relationship diagram.

2. Identify the data sharing that will take place with customer, internal and external. Provide a copy of any data exchange agreements that exist.

3. Identify tools that will be used to manage project metadata and data transformations.

4. Describe how metadata will be transferred from design tools to the Corporate Metadata Repository (CMR) and vice versa (see Appendix 3).

5. Describe anticipated data transformation/data collection/conversion/porting.

6. Identify the data standards that will be used.

7. Identify who will have access to the application, and describe the high level group that will have create, read, update, archive, and delete capabilities.

8. Describe any changes in any of the information provided in the Business Case Development Stage.

9. Plans for managing data must be considered as part of the Project Management Plan.

4.6 Control Phase - System Design Stage

1. Provide a logical data model.

2. Identify data elements: a) Indicate those data element existing in CMR. b) Identify and explain, define, and justify the creation of new data elements.

3. Populate project data dictionary according to the CMR requirements in Appendix 4.

4. Describe data quality/integrity considerations (e.g. system edits, pick-lists, or any other data quality methodologies). (See Appendix 5)

5. Identify the transformation/data collection/conversion/porting that will take place (e.g. data mapping from old physical databases to the new logical model).

6. Provide the schedule of data transformation/collection/conversion/porting activities.

7. Data Sharing: Fully describe all known data interfaces with other systems.

8. Update the Data Management Plan as necessary.

4.7 Control Phase - Development/Construction Stage

1. Provide a physical data model.

2. Provide a project dictionary with complete descriptions of all data elements (see Interim Guidance IM addressing Data Element Attributes).

3. Provide project data standards (see Appendix 3) and business rules (see Appendix 4).

4. Data Sharing:
Provide a list of shared data elements (include application).
Provide a copy of any final authorized data exchange agreement(s) pertaining to the project.

5. Provide data transformation/data collection/conversion/porting documentation.

6. Provide data validation procedures.

7. Update the Data Management Plan as necessary.

4.8 Control Phase - Transition/Deployment Stage

1. Provide any changes, which may have been made to the final documentation.

2. Identify responsible contacts for monitoring data quality.

3. Provide proof of Official Agency Record Designation and Documentation (OARDD) certification.

4. Update the Data Management Plan as necessary.

4.9 Evaluate Phase - Operations and Maintenance

1. Coordinate any changes to the final documentation or software with all affected parties.

2. Provide reports on the level of accuracy of the data (see Appendix 5).

3. Provide archiving documentation at system closeout.

4. Audits will be conducted in accordance with the Best Management Practices for Records.

5. Provide audit results of data quality reviews.

5.0 Roles and Responsibilities

Data Management, System Coordination Office (WO-570D):

Will evaluate Bureau wide projects and investments as it relates to the established data requirements and document all national systems via the Corporate Metadata Repository. Will coordinate with the Bureau Data Administrator and/or the Bureau Architecture Team.

Project Manager :

Responsible for insuring all required information is submitted to Data Management, Systems Coordination Office.

Data Stewards:

Responsible for the integrity of data in their program area or system. Ensures that the data standards for that program area or system are enforced.

Appendix 1

Data Impact Analysis from Corporate Metadata Repository

Do you want to know how your data fits with what is already in place, so you may not have to recreate what has been previously done? The SCO Data Management group is ready to provide any assistance in running the reports or help you become familiar with the Corporate Metadata Repository (CMR).

In order to fully comprehend the implications of creating, changing, reusing, or deleting a data element, the relationship to applications and other data elements and their use need to be understood. In addition, the impact analysis can be used to reduce duplication of data and promote reuse of commonly-used data.

This analysis can provide the characteristics of each element, such as format, length, precision, scale, and the applications associated to the data elements. It will also provide other data element names that contain the same principal or key words in either the data element name or definition.

To assist with the analysis, standard reports are available using Brio to search the Corporate Metadata Repository (CMR). The access to Brio and the Brio User Guide, is located at http://web.blm.gov/CMR/cmr_home.htm. The CMR staff is available to consult on possible keywords for searches, run the reports, and/or be available to provide assistance for those running their own reports. More than one iteration of these searches may be necessary to expand or narrow the scope of the searches. Custom Reports may be necessary and will be determined on a case by case basis. Brio, SQL, Excel and/or any tool required to provide helpful information in a user-friendly format may be used.

The standard Keyword Reports, either Search Name or Search Definition, can provide a listing of data elements that contain a keyword in the name or definition. Both queries provide the same output report, displaying Element Name and Definition, and associated Application. The sample below is a 'Data Element Keyword Report', using the 'Search Definition' option, displaying 'Data Element Names with Details' for the report.

Data Element Name	Application Name	Data Element Number
TRANSACTION CODE	Automated Fleet Management System	----
TRANSACTION CODE	Collection and Billing System	----

THE 2 CHARACTER CODE IDENTIFYING THE TYPE OF DOCUEMNT: BD = BILLING DOCUMENT; THE FFS TRANS CODE; THE FFS TRANSACTION CODE FROM THE ORDER ITEMS TABLE; THE FFS TRANSACTION CODE: PV = PAID VOUCHER; THE FFS TRANS CODE: CR = CASH RECEIPT, CREDIT DEBIT VOUCHER PV = PAID VOUCHER CG = OPAC THE 2 CHARACTER CODE IDENTIFYING THE TYPE OF DOCUEMNT: BD = BILLING DOCUMENT; THE FFS TRANS CODE: CR=CASH RECEIPT CREDIT DEBIT VOUCHER PV=PAID VOUCHER CG=OPAC THE FFS TRANS CODE: CR=CASH RECEIPT, CREDIT DEBIT VOUCHER PV=PAID VOUCHER CG=OPAC.

The Data Element Report provides four reports but only the Data Element Definition Report provides a listing of data elements by logical name, with their associated physical name, format, length, precision, scale, and definition. Below is an example of this report using the data element name "TRANSACTION CODE".

Logical Name: TRANSACTION CODE **Element Number:** ----

Application Name	Physical Name	Format	Length	Precision	Scale
Automated Fleet Management System	transaction_cd	CHAR	3	3	0
Collection and Billing System	trans_code	CHAR	2	2	0

THE 2 CHARACTER CODE IDENTIFYING THE TYPE OF DOCUEMNT: BD = BILLING DOCUMENT; THE FFS TRANS CODE; THE FFS TRANSACTION CODE FROM THE ORDER ITEMS TABLE; THE FFS TRANSACTION CODE: PV = PAID VOUCHER; THE FFS TRANS CODE: CR = CASH RECEIPT, CREDIT DEBIT VOUCHER PV = PAID VOUCHER CG = OPAC THE 2 CHARACTER CODE IDENTIFYING THE TYPE OF DOCUEMNT: BD = BILLING DOCUMENT; THE FFS TRANS CODE: CR=CASH RECEIPT CREDIT DEBIT VOUCHER PV=PAID VOUCHER CG=OPAC THE FFS TRANS CODE: CR=CASH RECEIPT, CREDIT DEBIT VOUCHER PV=PAID VOUCHER CG=OPAC.

The following reports are samples of some of the custom reports that can be provided by the CMR staff.

A list of applications and the number of elements, in that application which meet the search criteria can be provided. For example, the following list shows the current applications and number of elements that meet the search criteria for Organization Codes.

APPLICATION	# of Elements
Alaska Land Information System	28
Automated Fleet Management	9
Automated Fluid Minerals	13
Automated Lease Management	19
Bond & Surety	14
Cadastral Survey Field No	2
Case Recordation	2
Collection and Billing System	39
Directives Digest System	1
Facility Inv Maint Mgmt System	14
Financial Mgmt Info System	14
Fire Reporting	4
Forest Vegetation Info System	1
Integrated Habitat Inv Cl	5
Inventory Data System	5
Legal Land Description	1
Library	4
Master Name	2
Mining Claims	2
Recreation Mgmt Info System	2
Status	3
Wild Horse & Burro System	30

Most applications in the CMR use Organization Codes.

The sample below is a portion of an Excel spreadsheet showing the results of a SQL query for Organization Code. The query used identified keywords for Organization Code (admin, org, unit, field office, resource area, district, location, agency, etc.) and searched the Logical and Physical Data Element Names and the Definition of the element.

	A	B	C	D	E	G	H	I
1	**Application Name**	**Physical Column Name**	**Data Type**	**Length**	**Precision**	**DE Number**	**Logical Element Name**	**Definition**
155	Financial Mgmt Info Syste					----	REPORTING OFFICE	DERIVED FROM THE FIRST 4 CHARACTERS OF THE EXECUTING ORGANIZTION AND THEN ADDING A ZERO TO THE END.
156	Fire Reporting	CHARSTATE	VARCHAR2	2	0	----	CHARACTER STATE IDENTIFIER	CORRESPONDING STATE IDENTIFIER FOR THE SACS CODE.
157	Fire Reporting	DISTRICTID	NUMBER	0	2	----	DISTRICT IDENTIFIER - FIRE	AN IDENTIFIER THAT REFERENCES A RECORD IN THE LOOKUP TABLE WL_DISTRICT.
158	Fire Reporting	LOCATIONCODE	NUMBER	0	1	----	LOCATION CODE	INDICATES WHETHER THE LOCATION WAS ENTERED AS A LAT/LONG OR IN UTM.
159	Fire Reporting	RESOURCEAREAID	NUMBER	0	3	----	RESOURCE AREA IDENTIFIER	IDENTIFIER THAT RELATES TO A RECORD IN LOOKUP TABLE WL_RESOURCE_AREA.
160	Forest Vegetation Info Sy	admin_unit	CHAR	6	6	----	ADMINISTRATIVE UNIT	THE CODE FOR THE ADMINISTRATIVE UNIT IN WHICH THE POLYGON FALLS. THIS IS AN OPTIONAL FIELD INTENDED TO FURTHER DEFINE THE POLYGON LOCATION. CODES SHOULD BE THE CORPORATE ALPHA-NUMERIC CODES FOR BLM FIELD OFFICES. CODES COULD BE USED FOR OWNERSHIPS OTHER THAN BLM.
161	Integrated Habitat Inv Cl	district	CHAR	2	2	----	DISTRICT	USED TO IDENTIFY A SPECIFIC BLM DISTRICT WITHIN A STATE WHERE THE DATA WAS RECORDED. SEE DED #0003 BLM ADMINISTRATIVE UNITS, STATE-DISTRICT-RESOURCE AREA-PLNG UNIT FOR DOMAINS.
162	Integrated Habitat Inv Cl					----	DISTRICT	USED TO IDENTIFY A SPECIFIC BLM DISTRICT WITHIN A STATE WHERE THE DATA WAS RECORDED. SEE DED #0003 BLM ADMINISTRATIVE UNITS, STATE-DISTRICT-RESOURCE AREA-PLNG UNIT FOR DOMAINS.
	Integrated Habitat Inv Cl	planning_unit	CHAR	2	2	----	PLANNING UNIT	AN ELEMENT USED TO IDENTIFY A POLITICAL DIVISION WITHIN A RESOURCE AREA. USE IS BEING PHASED OUT ALTHOUGH MOST OFFICES STILL HAVE INFORMATION BASED ON THIS FIELD. SEE DED #0003 BLM

All reports run by the CMR staff will provide:
•Search Criteria
•Results (Two standard sorting options have been identified and will be provided: By element name, By application name)

Since the CMR is not fully populated, the following lists will be provided:
•National Applications included in the query
•National Applications not in the query. (CMR staff will be the point of contact for any further investigation of the applications not included in the search, if required.)

The following is a list of some of the elements the Corporate Metadata Repository can provide:

Data Element Information: [these attributes may be listed for each application it is used by]
- Logical Data Element Name – a descriptive "long name" for the associated physical data element.
- Definition -- free-form text that describes the data element.
- Domain Codes and Descriptions – the valid values for an element, e.g. the data element STATE CODE would have values of AL and AZ with corresponding descriptions of ALASKA and ARIZONA. Likewise, subdomain codes are codes within a domain code, i.e. a portion of the domain code value contains another code structure.
- Physical Data Element Name – the actual name of the data element as specified in the database table, i.e. the column name.
- Length – the length in bytes of the data element. Integer data types are fix sized whereas the size of decimal and character data types are individually specified.
- Precision – the number of digits in a numeric data type.
- Scale – the number of decimal positions within the number of precision digits
- Data Type – defines the stored format of the data element, e.g. binary, blob, character, date, datetime, integer, interval, money, numeric, text, serial, varchar.
- Table Name – the database table name.

Application Information:
- Application Name – descriptive text that identifies the application, e.g., Timber Sales Information System.
- Application Code – an abbreviation for the application, often uses the first letter of each word in the application name, e.g., TSIS.
- Description – textual description of the application, including the business operation it supports and general functions the application performs.
- AD Office Code – the BLM office code of the system owner, which falls under a particular Assistant Director (AD).
- BLM Program/Subprogram Code – a plan or system under which actions are taken toward the management of public resources. There is an official number for every program and subprogram that corresponds to the Code of Federal Regulations number.

Contact Information:
- Contact Name – the first and last name of a person who is affiliated with an application.
- Role – each contact is responsible for one or more of the following roles; Architecture Contact, Data Steward, Development Contact, Operations Contact, System Owner.

Database Information:
- Table Name – the database table name.
- Column Name – the data element name as specified in the database table, i.e. the physical data element name.
- Key Column – column names that are designated as either primary key or foreign key references.

Application Architecture:

- Hardware Information

Vendor – the name of the hardware vendor (brand name, not seller). For example, Apple Computer, IBM, IBM Compatible PC, SUN

Model – the vendor's marketing designation for the product line and specific computer. For example, E10000, E4500, IBM Compatible PC, Dual Pentium II, RS/6000, RS/6000 43p-140, RS/6000 F50, RS/6000 J-40, RS/6000 J-50

- Operating System

Vendor – the name of the operating system vendor (brand name, not sales channel and will commonly be the same as the hardware vendor). For example, Apple Computer, IBM, Microsoft, SUN.

Name – the vendor's marketing designation for the operating system software. For example, AIX, DOS, Secure ICA Client, MacOS, Windows NT Server, Windows NT Workstation, Solaris, SUN-OS, Windows, Windows 95, Windows 95 NT Adv Server, Windows 95 Terminal Server, Windows 98, Windows 2000, Winframe for Windows

Version – the vendor's designation for the installed release of the operating system software. For example, 10.20 (for HP-UX), 95 (for Windows), 4.0 (for Windows NT).

Appendix 2

High Level Bureau Data Groups

APPEAL	All correspondence and documents generated by both the appellants and the BLM regarding legally contested decisions.
ASSESSMENT	The result of an analytic process. Does not include performance assessments, condition/status assessments.
AUTHORIZATION	The instruments that allow use to occur such as leases, grazing permits, mining claims, deeds, conveyances, etc. Includes terms & conditions, standards, and implicit authorizations.
BUDGET	Resource requests, financing, revenues and available funding such as appropriations.
COMMENT	Concerns, recommendations, issues, observations, etc. raised by the public regarding a BLM plan or proposed actions.
COMPLIANCE	Information on determinations of compliance with use terms, conditions and stipulations. Includes analysis of compliance (i.e. not under Assessment), also includes performance evaluation of customers (i.e. not under Results Evaluation).
CONDITION	Natural resource, social, economic, boundary and land tenure data used to compare landscape condition/status against identified standards and criteria and to define the current condition/status of the landscape. Includes analysis of resource data to derive Condition information.
CONTRACT	Leases, agreements, permits, etc., which legally obligate the BLM and at least one other party.
CUSTOMER	Individuals, corporations and groups which conduct business with the BLM or are involved in actions of the BLM.
EMPLOYEE	Employment information such as title, position, grade, etc., on someone who works for the BLM.
ENFORCEMENT	Information about the exercise of compliance authority, including fines, impoundment and cancellation of use contracts. This includes the identification and resolution of trespass cases. Includes determination of corrective action (i.e. not under Assessment)

FACILITY	Information on structures erected and maintained by the BLM and others, including buildings, fences, culverts, etc. Includes information on all facilities (BLM or customer owned).
GUIDANCE	Policies, procedures, directives, manuals, handbooks, etc. Includes strategies and activity plans.
INCOMING	Expressions of interest for use authorization as well as requests for general information or BLM-produced products.
LAND STATUS	Information on land ownership, sensitive or critical areas, lands available for disposal or use, etc. Includes determination of Land Status (i.e. not under Assessment).
LAND USE PLAN	Information on Resource Management Plans (RMPs) (does not include project plans, strategies, or work plans).
MANDATE	All imperatives placed on the BLM by law, regulatory bodies, executive orders, courts, etc.
NEPA	All correspondence and BLM-generated documents related to the NEPA process.
NOTICE	Formal communications both to and from the BLM such as sundry notices, demand letters and other legal documents.
ORGANIZATION	Information on the administrative and functional structure that sustains the enterprise.
OUTGOING REQUEST	Requests for information, models, protocols, permits, etc., initiated by the BLM, to the customer or other agencies or members of the public.
PROJECT	All actions undertaken on the ground except for the development and maintenance of facilities. Includes project plans. Also includes development and maintenance of BLM facilities.
PUBLIC	Information on individual organizations and groups that are external to BLM (other than CUSTOMER).
QUESTIONNAIRE	Instruments for gathering performance results both within and external to the BLM.
RESOURCE	Information on both renewable and non-renewable resources.
RESPONSE IN	Information, permits, etc. provided to BLM as requested by BLM. Includes communications solicited by the BLM.

RESPONSE OUT	Information, approvals, denials of use authorization request, BLM materials, etc., provided to customers or the public as requested. Includes communications to other agencies, customers and the public, which require some response.
RESULTS EVALUATION	The analysis and evaluation of performance results, effectiveness results and organization and individual performance accomplishments. Does not include performance evaluation of customers.
STRATEGY	Goals, objectives, long-term performance objectives, expected outcomes, effectiveness measures and how to achieve them.
USE	Information on the legal enjoyment of property or resource. Includes all uses (legal & illegal), includes proposed & planned, as well as actual. Does not include allowed which is under authorization.
WORK LOAD	Demand work, workload needs, BLM-initiated work tasks, unachievable priority tasks, etc.
WORK PLAN	Organizational and individual task assignments, performance goals, funding and FTE allocations

Appendix 3

WO IM 2001-029, Data Management Interim Guidance

Containing 4 Attachments

Attachment 1: National Data Standard Change Request Procedure

Attachment 2: Organizational Code Change Process

Attachment 3: Basic Attributes of a Data Element

Attachment 4: Data Management Naming Conventions

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
Washington, D.C. 20240

November 7, 2000

In Reply Refer To:
1283 (560)P

EMS TRANSMISSION 11/13/2000
Instruction Memorandum No. 2001-029
Expires: 09/30/2002

To: All Washington Office and Field Officials
Attention: Data Administrators, Project Managers, Software Developers, User Representatives for National Automated Systems, IRM Chiefs

From: Assistant Director, Information Resources Management

Subject: Data Management Interim Guidance

Program Area: Information Resources Management

Purpose: This IM establishes guidance for the adoption and use of data standards that supplements existing data management procedures. Immediate implementation of nationwide data standards is essential to maximizing the value of data collected in conjunction with the increased number of planning starts and fire restoration efforts that BLM is faced with this year.

Background: Previous temporary directives have expired. The current business requirements and processes for the Bureau's Data program need to be updated. The BLM Data Management Plan 2001 is posted on the Bureau Architecture home page at http://web.wo.blm.gov/blma/. Manual/Handbook Sections Affected: This IM effects Manual Section 1283 - Data Administration.

Policy/Action: The Planning staff (WO-210) is to identify needed minimum data standards for plans to be initiated in FY 2001 and issue direction on this to the field by early December. The adequacy of pre-planning for data standardization, collection and use will be a basis for funding decisions for new planning efforts.

Each Washington Office Group Manager is to review the current, national BLM data standards and identify needed changes and/or additions. When considering new data standards, existing federal standards, or cooperating agencies standards should be adopted unless there is a good reason to develop a different standard. Group Managers, will, when necessary, convene small groups across programs to meet and review standards for data by resource type. For example, SWA, fisheries, T&E and AML could meet to discuss standards for "water" data. As a part of

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the convening work groups, the Group Managers will identify "corporate" data which constitutes data commonly collected and used in analyses that require a consistent result or are rolled up into national reporting requirements. It is recognized that not all data is "corporate."

After coordination with the ADs for WO-200 and WO-300, the CIO has appointed Mr. Gary Stuckey as Project Manager for the Bureau's Data Management Plan 2001 project.

The attached procedures provide guidance for the creation and modification of data elements. This information applies to:

1. National Data Standard Change Request Process
2. Organizational Code Change Process
3. Basic Attributes of a Data Element
4. Data Element Naming Conventions

Permanent guidelines based on business requirements will be developed as products from the Data Management Plan and will replace this interim guidance as the new guidelines become available.

Timeframe: These procedures are effective immediately.

Budget Impact: None. These procedures document current requirements.

Coordination: This document was developed by a team of State Data Administrators during preparation of the Data Management Plan.

Contact: For further information, please contact Larry Money, IRM Policy and Records Group Manager (WO-560), at 202-452-5008, or Melanie Rhinehart, Data Manager WO-570D, at 303-236-9940.

Signed by:
W. Hord Tipton
Assistant Director
Information Resources Management

Authenticated by:
Barbara J. Brown
Policy & Records Group, WO-560

4 Attachments:
1 -National Data Standard Change Request Procedure (2 pp)
2 -Organizational Code Change Process (2 pp)
3 -Basic Attributes of a Data Element (2 pp)
4 -Data Management Naming Conventions (5 pp)

National Data Standard Change Request Procedures

The following steps are used by Data Administrators to facilitate creating new and updating existing Bureau of Land Management (BLM) national spatial and alphanumeric data standards.

Note: Organization codes are changed through the steps found in the ORGANIZATION CODE CHANGE REQUEST PROCESS.

Any BLM employee may initiate a change request and it must be based on a business need. The change request is coordinated with the initiator's Data Administrator and local Data Steward. The Washington Office (WO) may select a Data Administrator to work on the change request. The Data Administrator will obtain preliminary feedback from the National Data Steward, who, based on business requirements may approve, modify, or reject the change request.

1. The Data Administrator must research existing data standards and verify that no conflicts with current data standards exist. The Data Administrator reviews, approves, revises, or rejects the change request if it is not needed.

2. A description of the proposed new or changed data standard should be jointly developed by the initiator, Data Administrator, and National Data Steward. The description includes: the name of the change request (e.g., use keywords to reference the change request), definition, business requirements (why it is needed), related business program area, related existing data standard (e.g., cite Instruction Memorandum number), data element number (if applicable), associated applications, metadata requirements, domain codes and attributes, business rules (source documents, currency, accuracy, and precision requirements) and procedures, data cleanup impacts, etcetera. The description also includes the name, office code, and phone number of the initiator (if applicable), Data Administrator, National Data Steward, User Representative, and due date for comments.

If creating a new data element, follow the BLM standard naming convention.

3. The Data Administrator sends the change request via email to BLM_DALIST, National Data Steward, User Representative, and any other affected parties suggested by the National Data Steward. The change request should state that comments are to be submitted to the Data Administrator and National Data Steward for review.

4. Data Management (WO-570 in Denver) assigns an analyst to work on the change; who notifies all the National Software Application System User Representatives whose application may be affected by the change. The analyst will assist the User Representative by researching technical and business issues and provides comments on the change request.

Attachment 1-1

5. All Data Administrators review the change request, solicit comments from users, compile final comments with review and concurrence of the State Data Steward, and forward comments to the Data Administrator and National Data Steward.

6. The Data Administrator collects, coordinates, and analyzes comments with the initiator and the National Data Steward. National Data Steward approves, modifies, or rejects final request.

7. The Data Administrator completes final National Data Standard Change Request which includes final request and comments submitted with analysis (adopted, rejected, reason, etc.) and sends via email to BLM_DALIST, National Data Steward, and User Representative.

8. User Representative coordinates final request with Data Management (WO-570 in Denver) to have the change entered into the BLM Corporate Data Dictionary (CDD) and Corporate Metadata Repository (CMR).

Once the approved change is added to the CDD and CMR, the CMR representative emails a message to the Data Administrator who verifies the change is correct. The Data Administrator confirms accuracy of the change with the CMR representative. The CMR representative emails a message to the BLM_DALIST, User Representative(s), and National Data Steward(s) announcing the update.

9. The User Representative coordinates the update of the data validation tables, decode tables, and any other applicable software application changes including reports where needed, and notifies National Data Steward when changes are completed.

10. National Data Steward issues a directive with the final National Data Standard, program workload priorities, cleanup requirements, and time frames for implementation. National Data Steward emails courtesy copy of directive to BLM_DALIST.

11. All Data Administrators coordinate with State Data Stewards to notify users of change in the data standard and business practice. State Data Stewards verify data has been updated to conform to the new data standard. Requests for mass changes (minimum of 100 occurrences) to data are coordinated by the Data Administrator with the User Representative. The User Representative will notify the Data Administrator via email when mass changes to data have been completed. The Data Administrator will notify the State Data Stewards that the mass changes have been completed.

The Data Administrator is required to keep documentation related to data standards change requests until no longer needed for convenience or reference purposes (BLM Records Schedule 23/21). Data Management (WO-570) is responsible for maintaining complete records regarding changes to the CDD and the CMR (BLM Records Schedule 20/20). National Data Steward is responsible for maintaining records regarding National data standards.

Attachment 1-2

Organization Code Change Request Procedures

The following steps are used by Data Administrators to update organization codes in the Bureau of Land Management (BLM) Corporate Data Dictionary (CDD) and Corporate Metadata Repository (CMR). Only the State/Center/WO Federal Personnel Payroll System (FPPS) Representative may initiate a change to organization codes and is fully responsible for establishing domain values and processing the change through FPPS, other financial, and personnel systems. The Data Administrator only ensures that the CDD and CMR are updated to reflect the change and coordinates with local Data Stewards and users. The process may take two cycles (first add the new organization codes and change the data, then repeat the process to request deletion of the unneeded organization codes).

1. The Data Administrator describes the proposed new or changed organization code. The description includes: the change request (add or delete domain codes, or change name), data element number, associated applications, Data Administrator Name, Office Code, and Phone Number.

2. The Data Administrator sends the change request via email to Data Management (WO-570 in Denver) who notifies all the National Software Application System User Representatives whose application may be affected by the change. Data Management (WO-570) will assist the User Representative by researching technical and business issues and provides comments on the change request.

3. The User Representative coordinates the final change request with Data Management (WO-570) to have the change entered into the CDD and the CMR. Once the approved change is added to the CDD and CMR, the CMR representative emails a message to the Data Administrator who verifies the change is correct. The Data Administrator confirms accuracy of the change with the CMR representative. The CMR representative emails a message to the BLM_DALIST and User Representative announcing the update.

4. The User Representative coordinates the update of the data validation tables, decode tables, and any other applicable software application changes including reports where needed and notifies the Data Administrator when changes are completed.

5. Affected Data Administrators coordinate with State Data Stewards to notify users of change in the organization code and business practice. State Data Stewards verify data has been updated to conform to the new organization code. Requests for mass changes (minimum of 100 occurrences) to data are coordinated by the Data Administrator with the User Representative. The User Representative will notify the Data Administrator via email when mass changes to data have been completed. The Data Administrator will notify the State Data Stewards that the mass changes have been completed.

Attachment 2-1

The Data Administrator is required to keep documentation related to organization code change requests until no longer needed for convenience or reference purposes (BLM Records Schedule 23/21). Data Management (WO-570) is responsible for maintaining complete records regarding changes to the CDD and the CMR (BLM Records Schedule 20/20).

Attachment 2-2

Basic Attributes for Data Elements

The following table provides interim guidance on the information that is required for data management staff to analyze new alphanumeric data elements. Spatial data elements follow the Federal Geographic Data Committee (FGDC) approved Content Standard for Digital Geospatial Metadata (FGDC-STD-001-1998):

Information Required	Example
Name	The data element name is made up of a Subject Area, Modifiers, and a Classword. The name of the data element must follow the Data Element Naming Convention

Definition	A definition must be provided that:
	$ is not circular or self defining (doesn't use the words in the element name to define it).
	$ includes references to any aliases and exceptions, as applicable
	$ does not contain abbreviations or acronyms
	$ is expressed without having to define the words used.
	$ uses common terminology.
	$ is stated in the singular.

Domain values or range of values	The singular value(s) or range of values that a data element may contain.
Type and Length	The data type (text, number, etc.) and the maximum number or digits or characters it may contain.
Precision, Format Characteristics	Any format or numeric precision characteristics that may be required.
Units of Measure (if applicable)	e.g., feet, yards, meters, gallons
Calculated or Derived Code	Indicated whether the data contained in the element is calculated or derived from other data. If the data is calculated or derived the calculations or derivations must be described.
Data Steward	The name, e-mail address, phone number and fax number of the Data Steward must be supplied.

Business Rules	List any business rules that apply to the data including but not limited to: $ Limitations on use $ Access/security $ Update/change requirements $ Data history requirements
Data Source	Where, and/or from whom the data is collected.
Reference Standard	If this data element is part of a standardized dataset, indicate which one (e.g.; FGDC, etc.)
BLM Program	The name of the BLM activity where the data is managed.
Authority (ies)	The regulatory or statutory authority where the data is being collected.

Data Element Naming Convention

The Bureau of Land Management (BLM) requires data standards for program activities to ensure data can be shared among offices and with partners for more efficient, comprehensive and up-to-date assessments of public land resources and land status.

Uniformly named data elements will ensure data accessibility and reusability across systems and users. The use of standard naming conventions will ensure that names for all BLM data elements are clear, brief, unique, context-free, and conform to the rules of syntax. Structured format and content for data element documentation:

- Minimize costs associated with the maintenance of identical information in different formats;

- Reduce needless duplication of data collection and storage;

- Reduce redundant data through consolidation of synonymous and overlapping data elements;

- Increase opportunities for sharing data among BLM users and exchanging data with partners.

- Enhance consistent interdisciplinary use of information.

Naming Convention - A naming convention is a collection of rules, which, when applied to data, result in a set of data elements named in a logical and standardized way. These data element names inform the user about the contents of the data value domain (the set of possible values for a data element), and the usage of the data element in a concise manner. The naming convention assists users to achieve efficient use and reuse of data while maximizing understanding of information both within and outside the organization.

Types of Name – Data elements are ideally the product of business needs analyses. Business process modeling will identify data elements at the conceptual, logical, and physical levels.

Conceptual – Name development begins at the conceptual data model level. At this stage, information needs are grouped as high-level entities or objects. For example, if "Tree" is an object class and "Height" is a descriptor, then the conceptual data element name would be "Tree Height". At this level there is nothing in the name that tells you what kind of tree this is or whether the height is a code, a number, a measure, etc.

Logical – At the more detailed logical data model level, a term is added to describe the form that the domain values (set of possible valid values) can take. This is called the Classword and tells you whether the data element is a number, a date, a percent, an identifier, etc. If the Classword of "Measurement" is added to "Tree Height" then the resulting logical data element name is "Tree Height Measurement".

Attachment 4-1

Generic Names - Logical data element names are often generic data elements (also called common or enterprise data elements). These are reusable data elements and are not tied to applications but may be used by various applications.

Physical – Names at the physical level are the names that are utilized in the software. They will only be abbreviated to accommodate the particular software system being used (e.g.; TREE_HT_MEAS). When abbreviations are necessary, the abbreviation standards will be applied. When multiplicity occurs, the alternative names are called Alias'. If required, alias names must be linked (or related) to the logical name that they represent. Use of alias names is highly discouraged.

Naming Convention Rules - The data element name is composed of a Subject Area (entity/object), Modifiers, and a Classword. The Subject Area contains information about the element, the Modifier describes the specific element, and the Classword indicates the type or category of information the element reflects. A representative list of Subject Area and a complete list of Classwords are at the end of these instructions.

The specific rules listed below apply to logical and physical data element names. In all cases, physical data element names are to be mapped to the parent logical data element name.

Semantic Rules – These rules govern what components are part of the name and any specific rules related to those component parts.

1. Subject Areas (also known as entities/objects/prime word) are based on the names of entities found in data models or objects found in object models. Only one Subject Area is allowed.

2. Modifiers may be added as needed to describe the data element and make it unique within a specified context.

3. The representation of the data value domain of the data element is described by the Classword.

4. Only one Classword shall be used in a data element. In cases where the name Modifiers and the Classword create a redundancy, and then one of them will be removed.

Syntax Rules – These rules specify the arrangement of the name components.

1. The Subject Area (object class) occupies the leftmost position in the data element name.

2. The Classword occupies the rightmost position in the data element name.

Attachment 4-2

3. Modifiers (located between Subject Area and Classword) may be used and must be ordered by increasing levels of specificity (left to right).

Lexical Rules – These rules determine the standard "look" of names.

1. Nouns are used in singular forms; verbs, if any, are in the present tense.

2. No special characters (e.g.; hyphen, slashes, etc.) are allowed, unless they are part of an approved acronym.

3. All words are separated by a space. Physical names may be constrained by software systems to use other separators (such as an underscore).

4. The first letter of each word will be capitalized and the remainder of the word will be in lower case.

5. Physical name length is dependent on the software limitations of the database management system.

6. Logical names are not limited in length.

7. Names should not be abbreviated. Use acronyms if possible.

8. Abbreviations that are needed will be done in right to left fashion, utilizing the standard abbreviations found in the Corporate Metadata Repository. When abbreviations are necessary, the abbreviation standards shall be applied.

9. Prepositions (e.g.; at, by, for, from, in, of, to) are not allowed except in cases where they are required for clarity (e.g.; Power of Attorney Code).

10. Articles (e.g.; a, an, the) are not allowed.

11. Conjunctions (e.g.; and, or, but, etc.) are not allowed.

If new Classwords or modifications to Classword definitions are needed, the National Data Standards Change Request Procedures must be followed.

Attachment 4-3

SUBJECT AREA EXAMPLES

Account
Action
Agency
Agreement
Animal
Applicant
Application
Appraisal
Approval
Assignor
Authorization
Bank
BLM
Bond
Budget
Card
Case
Cash
Cave
City
Collected
Comment
Commercial
Commodity
Contact
Contract
County
Cruise
Customer
Deposit
Discount
Document
Drainage
Enforcement
Facility
Fax
FFS
Fiscal
FRC
Fund
Geologic
Inspection
Inventory
Land
Mailroom
Merchant
Meridian
Mining
Office
OPAC
Order
Pay
Payment
Penalty
Plan
Product
Production
Remitter
Reservoir
Right of Way
Section
Species
State
Status
Subactivity
System
Tax
Transaction
Travel
User
Vendor
Well
Zip

CLASSWORDS

Address	This is not a formatted attribute; each portion of an address would require a separate attribute (example: street address).
Amount	Monetary amount.
Code	An attribute which is represented by a coded field. A code is usually six or fewer alpha or numeric characters, and may have associated descriptions.
Date	Calendar date. The format standard is MMDDYYYY.
Identifier	An artificial, system-assigned number which identifies a unique occurrence of an element.
Measurement	Gauged or scaled extent, capacity, dimension, or frequency. Use when a unit of measurement is clearly specified or identified.
Name	Name of a person, place, or thing. This is not a formatted attribute; each portion of a name would require a separate attribute (example: first name).
Number	An alphanumeric non-system identifier (example: 182B, UTU12345). Non-computational numeric data.
Percent	Numeric data that represents a percentage or ratio.
Quantity	A numeric, non-monetary sum or count.
Time	Time of day. The format standard is HHMM (24 hour clock).
Text	Data having an unstructured content.
Year	Calendar unless fiscal is specified.

Attachment 4-5

Appendix 4

Corporate Metadata Repository Fact Sheet

Corporate Metadata Repository Rules

Corporate Metadata Repositiory Requirements

FACT SHEET FOR THE CORPORATE METADATA REPOSITORY (CMR)

What is the CMR?

The CMR, or Corporate Metadata Repository, is an Oracle-based, commercial, off-the-shelf (COTS) software package that stores metadata—data about data—about BLM's national applications. By creating a central, shared source of metadata, with consistent data definitions, CMR reduces application development and maintenance costs, allowing BLM to derive value from its information assets. The CMR contains:

- $ System Description and Characteristics
- $ Data elements with definitions, domains and other attributes
- $ Data Steward and other ownership information
- $ Entity Relationship Diagram information
- $ Schema (actual SQL code used to create database tables, indexes, constraints).
- $ Physical database relationships
- $ Business Rules
- $ Transformation Information

What is in the CMR?

The CMR contains information about our national applications. There are approx. 45 national applications identified. The most complete applications in CMR are: AFMSS, Automated Fleet Management, Bond and Surety, Wild Horse and Burros, Cadastral Survey Notes, Collection and Billings, Inventory Data, Financial Management Info, Integrated Habitat Inventory Classification, Library, Master Name and LR2000 including Case Rec., Geo-ref, LLD, Mining Claims and Status. Other systems in varying stages of completeness include: Time and Attendance, Forest and Vegetation Info, Aircraft Monitoring, Timber Sale Info, Automated Lease Mgmt. and GLO.

Where do I find it?

Users can access the CMR through a web-based tool called the data shopper. The web address is: http://web.blm.gov/CMR/cmr_home.htm

Who uses the CMR?

The CMR is for <u>any</u> BLM user to use as a reference. Most frequent users are data administrators, user representatives, national application users and developers.

What is the RUG?

The Repository User Group, or RUG, is guiding the direction of how the CMR is implemented in conjunction with the Bureau Architecture.

SCO Data Management :

Melanie Rhinehart----Data Manager
Stephen Adams------Electronic Government
Barb Benz----------Data Analyst
Theresa Fresquez—CMR, Database, Access
Barb Kett----------Data Modeler and BA Coordinator
Susan McAttee-------CMR Technical Lead
Tom Niemeier----------CMR, Change control, Brio Reports
Jerry Somers---------CMR, Database
Brian Campbell--------CMR, Database

Repository User Group:

Stan Frazier----------Oregon
John Kunzler----------Nat'l Business Ctr
Linda Ricketts----------Alaska
Ed Roberts----------Idaho (Sharron Deroin)
Cindy Schafer----------Nat'l Fire Center
Wally Stiles----------Wyoming
Jim Turner----------National Science/Tech Ctr.
John Broderick---------BA Advisor
Anna Steele----------Advisor, DSD, Idaho

Interim
Corporate Metadata Repository Rules

(Not in any order)

1. New systems/developers must review common and logical elements in the repository before creating new ones**.**

2. Schemas/ structures must be updated on a regular schedule.
   1 Every 6 months/or as needed
   2 Establish a process to inform user reps of updates
   c. Impact analysis will help with how dropping or adding tables may impact other systems

3. All data elements shall follow the BLM standard naming convention.
   1. Interim guidance issued November 13, 2000 that covers the naming convention, basic data element attributes, change process for data elements and change process for organization codes. **WO IM No. 2001-029**

4. No duplicate logical elements will be added to the repository.

5. Only productions systems/applications go into the repository.

6. All applications in the repository must follow the national data change process.

7. Fully documented systems shall have:
   $ schemas
   $ logical elements and definitions linked to schemas/repository will sort out duplicates
   $ Source of new elements or reused data elements
   $ application business rules - **(no systems currently have them documented)**

8. Each item listed in #7., will contain an overall status in the repository.

9. Proprietary National systems require different handling (i.e. Lawnet) and will be reviewed on a case by case basis.

10. Data element numbering (if any) will be by individual system.

11. A Common Data Element is defined as:
    "A context free, shareable, atomic-level data item that references a business fact. All project teams that use same type of object in the real or automated world agree to describe it with the same common data element. The common data element concept permits the construction of a link between system-level data and enterprise-level data."
    (Atomic-level means it cannot be broken down any further).

    At the system-level, it is possible that a data element with a non-standard format may be required. The element is mapped to the enterprise-level common data element which identifies the standard definition and format.

Examples of Common Data Elements:

Com. Data Element:	Last Name	Airport Name
Business Term:	Employee's Last Name	Closest JetPort
Data Element:	Employee Last Name	Airport (Closest Jetport)
ENTITY/Attribute:	EMPLOYEE / Last Name	AIRPORT / Name
TABLE.COLUMN:	EMPL. LAST_NM	AIRPORT. ARPT_NAME

12. Impact Analysis will not be addressed until Phase II of the repository.

.....

Other items the RUG needs to address: (Will be considered at the CMR meeting Feb. 14, 2001).

1. Establish BLM common data elements
   This item seems to be outside the scope of the RUG. For example, there is a whole group recently formed to deal with "customer". Products from this group would include common data elements related to customer.

2. Coordinate the establishment of data stewards for common data elements.

3. We will need to establish a common data element review board for the future.
   Phase II??

4. The repository should remain an "intranet" system and not be accessible to the public.

5. If a data element is a common data element, its definition is the "standard".

6. Do we add National Standards that presently exist, such as the USPS Postal Addressing Standards, Pub. 28 of Nov. 1997, to the Repository so as not to have to reinvent the wheels?
   FIPS standards/Inter-government standards and other Govt. standards could become some of our common data elements we could store in the repository currently. The NILS/Cadastral elements should be looked at and added to the repository, but they are not attached to a system yet. FGDC may be a good source for other activity areas as well.
   (Refer to #1 above).

Corporate Metadata Requirements
November 19, 2001

The Corporate Metadata Repository (CMR) is a database of administrative, architectural, and metadata (data about data) information for BLM applications. As the central repository for BLM application information, the CMR is an enterprise-wide vehicle for coordinating and sharing metadata among data administrators, system developers, user representatives, and application users. In addition to application summaries, the CMR maintains the metadata and relationships of common, logical, and physical data, as well as data modeling, business rule, and data warehouse transformation information.

The following outline describes the specific types of information contained in the CMR.

1. **Application Information**

1.1 Identification Information

1.1.1 Application Name - descriptive text that identifies the application, e.g., Timber Sales Information System.

1.1.2 Application Code - an abbreviation for the application, often uses the first letter of each word in the application name, e.g., TSIS.

1.1.3 Description - textual description of the application, including the business operation it supports and general functions the application performs.

1.1.4 AD Office Code - the BLM office code of the System Owner which falls under a particular Assistant Director (AD). Note: Link to User Representatives (http://web.blm.gov/data_mgt/nat_user_reps.htm) list for Office Codes under AAD@ column.

1.1.5 CM National Baseline Indicator - a Configuration Management National Baseline product approved for use by the BLM and placed under change control; Y/N, yes/no indicator.

1.1.6 BLM Program Code - the general subject function code as found in BLM manual 1220.

1.1.7 BLM Subprogram Code - the detail subject function code as found in BLM manual 1220. Note: Link to Subject Code list; Numerical Index (http://www.blm.gov/nhp/efoia/sfcode-numeric.html) or Alphabetical Index (http://www.blm.gov/nhp/efoia/sfcode-alpha.html)

1.1.8 Application Acquisition Method - the origin of the application; Developed, Leased, Purchased.

1.1.9 Related Application - the name of the application that has a successor or predecessor relationship with this application.

1.1.10 Application Relationship - indicates the relationship to the Related Application; Successor, Predecessor.

1.1.11 Mission Goal - describes which mission goal the application supports;
Manage natural resources for multiple-use and long-term value
Be customer focused and responsive
Adhere to applicable laws
Work in partnerships
Make sound business decisions
Provide broad access to public information
Be an adaptive organization

1.1.12 Mission Critical - indicates if the application is critical to the mission goal; Y/N, yes/no indicator.

1.1.13 Mission Essential - indicates if the application is essential to the mission goal; Y/N, yes/no indicator.

1.2 Contacts

1.2.1 Contact Name - the first and last name of a person who is affiliated with an application in one or more roles.

1.2.2 Role - each contact is responsible for one or more of the following roles; Application Steward, Architecture Contact, Data Steward, Development Contact, Operations Contact, Point of Contact, Project Proponent, Project Sponsor, SCO Lead, Stakeholder, System Owner, Technology Contact, User Representative.

Architecture Contact - Name of the person from the BEA Team or SCO who assists with BEA linkage.

Data Steward - the BLM employee responsible for maintaining up-to-date knowledge, determining data accuracy, and ensuring quality control of their area of expertise.

Development Contact - the person in IT who is in charge of the development, enhancement, or maintenance of an application, or in charge of the acquisition, acceptance testing, and/or deployment of a purchased application or an outsourced maintenance or enhancement release of an application.

Operations Contact - the person in IT who is responsible for the day to day operational aspects of an application, such as backups, reboots, and monitoring.

System Owner - the person who is responsible, once the system has been approved by the ITIB, for making sure the system continues to meet a business need and who is responsible for obtaining funding for the continuing operation of the system.

User Representative - the point of contact when a user of one of the national systems has questions, problems or comments concerning the data processing requirements of that system.

1.2.3 Role Responsibility - text used to qualify the contact=s role.

1.2.4 Role Remarks - additional comments about a contact=s role within a particular application.

1.3 Platform - identifies the type of computing hardware and operating system used in development, testing, and production deployment of an application.

1.3.1 Hardware Vendor - the name of the hardware vendor (brand name, not seller); Apple Computer, IBM, IBM Compatible PC, SUN, Unknown.

1.3.2 Hardware Model - the vendor=s marketing designation for the product line and specific computer; Dual Pentium II, E10000, E4500, IBM Compatible PC, RS/6000, RS/6000 43p-140, RS/6000 43p-150, RS/6000 F-50, RS/6000 J-40, RS/6000 J-50.

1.3.3 Operating System Vendor - the name of the operating system vendor (brand name, not sales channel and will commonly be the same as the hardware vendor); Apple Computer, IBM, Microsoft, SUN, Unknown.

1.3.4 Operating System - the vendor=s marketing designation for the operating system software; AIX, Disk Operating System (DOS), HP-UX, LINUX, MacOS, Secure ICA Client, Solaris, Sun Operating System (SUN-OS), Windows, Windows 2000, Windows 95, Windows 95 NT Adv Server, Windows 95 Terminal Server, Windows 98, Windows NT, Windows NT Server, Windows NT Workstation, Winframe for Windows.

1.3.5 Operation System Version - the vendor=s designation for the installed release of the operating system software, e.g. 10.20 (for HP-UX), 95 (for Windows), 4.0 (for Windows NT).

1.3.6 Utilization Mode -the mode in which the platform is being utilized by the application; Production, Non-Production, Both.

1.3.7 Utilization Tier - the architectural tier for which the platform is being utilized by the application; Server, End-User, Mixed.

1.3.8 Platform Quantity - the number of instances of the specific platform used by the application.

1.4 Execution Environment - the underlying software and communications necessary for the application to run.

1.4.1 Software Environment - the type of software required to support the application; None, Application Server, Dumb Terminal, FORTE, JAVA, Macintosh Native, MS Windows Native, System Network Architecture, TCP/IP, Token Ring, UNIX Native, Web Browser, Windows NT, X-Windows.

1.4.2 Software Usage - the functional computer area where the software is used; End User, Server, Network.

1.4.3 Network Type - the type of networking environment required to support the application; TCP/IP, NETBIOS, SNA, IPX.

1.4.4 Execution Product Type - the type of product required for the application to run properly; Communication, Data Access, Desktop Productivity, GIS Tools, GUI Support, Middleware, Miscellaneous, Multiple, None, Reporting, Security, Transactional.

1.4.5 Execution Product Vendor - the name of the product vendor; Adobe, BEA Systems, BRIO, Citrix, ESRI, IBM, Informix, Microsoft, Prolifics, Tekton, Inc, Unknown.

1.4.6 Execution Product Name - the vendor=s marketing designation for the product; 4GL, Access, Acrobat, ArcView, dBase, Excel, Informix Client, Jam, MQ-Series, Panther, Tuxedo, Web Client Plug-In, WebLogic Enterprise.

1.4.7 Execution Product Version - the vendor=s designation for the installed release of the product, e.g. 4.7, 2000, etc.

1.5 Application Construction - information about the architecture and implementation of the application.

1.5.1 Application Architecture - the type of application architecture; distributed, client server, n-tiered, unknown.

1.5.2 Customization Level - to what extent is the application BLM specific; Commercial Proprietary, Commercial Off The Shelf purchase, Commercial Off The Shelf - customized, Custom application.
Commercial Proprietary - the application provider has modified the application to conform to the BLM's business model. *Commercial Off The Shelf purchase* - application runs the same at the BLM as it does for anyone else who bought it. *Commercial Off The Shelf - customized* - has been customized to the BLM's Business model through configuration, preferences and other means not involving source code changes. *Custom application* - application was built specifically for the BLM.

1.5.3 Language - the programming, scripting, specification, or markup language used in development; C, C++, COBOL, FORTE, IDL, JAVA, JavaScript, PERL, SQL, Visual Basic, Visual Basic Script, XML.

1.5.4 Development Tool Type - the type of a tool used in developing or enhancing an application; 4Gl, CASE, Code Library, Database Access, Develop Environ, GUI Design/Bilder, Miscellaneous, Modeling, Software Config Mgmt, Testing, Unknown.

1.5.5 Development Tool Vendor - the name of the development tool vendor; Adobe, Apple Computer, BRIO, Citrix, FORTE, Informix, Microsoft, Objectory, Prolifics, Rational, Sterling, Sybase, Visio Development, Unknown.

1.5.6 Development Tool Name - the vendor=s marketing designation for the development tool; 4GL, Access, Brio, Concurrent Versioning, Cool:Biz, DBAccess, dBase, Distributed Defect Tracking System, Interactive SQL, Jam, NewEra, Panther, Requisite Pro, Rose, Visio, WebObjects.

1.5.7 Development Tool Version - the vendor=s designation for the installed release of the development tool, e.g. 1.1, 5.0, etc.

1.6 Data Storage - how the application stores, accesses, and manages its local data.

1.6.1 Information Type - the type of information being stored; Business, Configuration, User Session, Application Performance.

1.6.2 Data Storage Technology - the category of data storage technology; ADBMS, DSAM, FLAT, HDBMS, ISAM, OODBMS, OTHER, RDBMS.

1.6.3 Data Storage Vendor - the name of the data storage product vendor; BRIO, Citrix, Informatica, Informix, Microsoft, Object Design, Oracle, Sybase, Versant, Unknown.

1.6.4 Data Storage Product - the vendor=s marketing designation for the data storage product; Access, Adaptive Server, Cloudscape, dBase, Dynamic Server, Enterprise Edition, HP-UX, LINUX, Parallel Server, Powermart, Solaris, Sun Operating System (SUN-OS), Unidata.

1.6.5 Data Storage Version - the vendor=s designation for the installed release of the data storage product, e.g. 7.3, 5.2, 8i, etc.

1.7 Business Process Relationships - how the application is utilized by business processes.

1.7.1 Business Process Number - the business process number that the application supports.

1.7.2 Business Process Name - the business process name that the application supports.

Note: Link to Enterprise Architecture Business Processes - Final Definitions (http://web.blm.gov/bea/processes.htm)

1.7.3 Extent of Fulfillment - indicates to what extent the application fulfills the process or activity; Automate, Data Access, Mechanize, Undetermined.
Automate means that the application automates all steps in the process. *Data Access* means that the application does not automate processes but merely provides user access and/or update capability to electronically stored data. *Mechanize* means the application automates only part of the process, a sub-process, or part of a sub-process. *Undetermined* means that the analyst was unable to make the determination within the time and information available.

1.8 Data Entity Relationships - information about how the application interacts with data.

1.8.1 BEA Data Model Name - the name of the Bureau Enterprise Architecture data model where the application is referenced.

1.8.2 Data Entity Name - the name of the high level data entity that interacts with the application; Appeal, Assessment, Authorization, Budget, Compliance, Condition, Contract, Customer, Employee, Enforcement, Facility, Guidance, Incoming Request, Land, Land Status, Mandate, NEPA, Notice, Organization, Outgoing Request, Plan, Project, Public, Questionnaire, Resource, Response In, Response Out, Results Evaluation, Strategy, Use, Work Load, Work Plan.

1.8.3 Interaction Type - indicates whether or not the application changes the data; Read-Only, Modify, Both, Undetermined.
Read-Only means that the application only reads the data. *Modify* means that the application creates, deletes, and/or changes the data in some way. *Both* read and modify. *Undetermined* means that the analyst was unable to make the determination beyond the fact that there is some interaction.

1.8.4 Form of Sharing - indicates the form of data sharing the application utilizes; Private, Duplicated, Shared, Enterprise.
Private means that the application exclusively controls that particular data and it is neither read nor updated by other analyzed applications. *Duplicated* means that the data is copied, either dynamically or periodically, between multiple applications for the purposes of rudimentary data sharing; this category does not include data replication for distributed databases, failure, or disaster recovery purposes. *Shared* data means that multiple applications have shared access to the data in a single data store, however there may still be multiple private, duplicated, and shared instances of the data. *Enterprise* data means a single source of the data accessed by all applications using that data; the data is not duplicated, nor are there other private or shared instances of the same data.

1.9 Business Subject Area Relationships - how the application aligns with the Business Subject Areas (BSA).

1.9.1 BSA Name - name of a BSA with which the application appears to align; Administration, Authorization and Enforcement, Compliance and Monitoring, Guidance, Land Status/Resource Condition Determination, Land Use Planning, Name and Address, Management, Records Management, Work Management.

1.9.2 BSA Alignment - indicates how well the application aligns with the BSA; Dominant, Minimal, Partial.
Dominant means that the application fits entirely or mostly in the application domain indicated by the BSA. *Partial* means that the application overlaps multiple BSA=s and this BSA is not dominant. *Minimal* means that the application overlaps multiple BSA=s but with a very small overlap to this BSA.

1.10 Business Decisions - information that addresses IT business decisions more than BLM business decisions.

1.10.1 Scope of Application - breadth of deployment and intended usage of the application; National, State.

1.10.2 Eligibility for Modification - indicates administrative restrictions on modification of an application; Maintenance & Enhancement, Maintenance Only, Restricted, Unrestricted, Unknown
Maintenance & Enhancement - An administrative decision has been made to control the scope and/or growth of the application by limiting modifications to maintaining and enhancing existing functionality. *Maintenance Only* - An administrative decision has been made to limit the money and effort spent on an application by restricting modification to maintenance work only (severity 1 and 2 bugs fixes). *Restricted* - An administrative decision has been made to halt modifications to an application except in extraordinary circumstance. *Unrestricted* - No administrative restrictions imposed on modifications to this application. *Unknown*.

1.11 Application Comments - additional comments by application information category

1.11.1 Comments Category - type of additional applicatio n comments; Application Construction, Data Storage, Execution Environment, Platform.

1.11.2 Comments - additional application comments

2. **Database Schema Information** - data derived from the database=s data definition language statements or from an ERwin physical data model (entity relationship diagram).

2.1 Table Information - database tables where the application=s data is stored.

2.1.1 Table Name - the database table name.

2.1.2 Column Name - the data element name as specified in the database table, i.e. the physical data element name.

2.1.3 Key Columns - column names that are designated as either primary key or foreign key references.

2.2 Physical Data Element - the smallest unit of data as defined in the database.

2.2.1 Name - the actual name of the data element as specified in the database table, i.e. the column name.

2.2.2 Data Type - defines the stored format of the data element, e.g. binary, blob, character, date, datetime, integer, interval, money, numeric, text, serial, varchar.

2.2.3 Length - the length in bytes of the data element. Integer data types are fix sized whereas the size of decimal and character data types are individually specified.

2.2.4 Precision - the number of digits in a numeric data type.

2.2.5 Scale - the number of decimal positions within the number of precision digits.

2.3. View Information - table name references and view column names.

2.4 Stored Procedure Information - procedure name and subprogram code statements stored in the database.

3. **Logical Data Element Information** - descriptive information about a data element. Note that applications having identical logical data element names may share the same logical data element as long as they are the same definition and contain the same domain code values.

3.1 Logical Data Element Name - a descriptive Along name@ for the associated physical data element.

3.2 Definition - free-form text that describes the data element.

3.3 Data Source - Where and/or from whom the data is obtained (e.g. FIPS Pub, name of the organization from which it was purchased, name of the application/system. etc.).

3.4 Domain Codes - the valid values for a data element that uses code values, e.g. a state code data element would have domain values of AK, AL, AR, ...WY.

3.5 Domain Description - text that describes the Domain Code value, e.g. a state code data element with a domain code value of AK would have a corresponding description of ALASKA.

Note: Some domain codes have subdomain codes and descriptions that further define the domain code, i.e. domain codes that have an extended value description.

3.6 Privacy Act Indicator - an indicator to designate that the data element falls under the Privacy Act; Y/N - a yes/no indicator.

3.7 Privacy Act Number - the Privacy Act System Notice Number (Section 552A, Title 5, US Code) that applies to the data element.

3.8 Logical Data Element Relationships - relating logical data elements to other CMR objects.

3.8.1 Logical to Physical Data Element - each logical data element name is assigned to a corresponding physical data element name.

3.8.2 Logical Data Element to Contact Name - each logical data element name is assigned to a Contact Name whose role is that of a Data Steward.

4. **Common Data Element** - a context free, shareable, atomic-level item that references a business fact. Applications that use the same type of object in the real or automated world agree to define data elements with the same properties (format, size, and domains) as the common data element. The common data element concept permits the construction of a link between application-level data and enterprise-level data.

4.1 Name - a data element name constructed without regard to any subject area qualifier, e.g. last name without the Acustomer@ subject area (customer last name).

4.2 Definition - a generic description of the data element, i.e. a definition without specific subject area information.

4.3 Data Type - defines the format of the data element, e.g. binary, blob, character, date, datetime, integer, interval, money, numeric, text, serial, varchar.

4.4 Length - the length in bytes of the data element. Integer data types are fix sized whereas the size of decimal and character data types are individually specified.

4.5 Precision - the number of digits in a numeric data type.

4.6 Scale - the number of decimal positions within the number of precision digits.

4.7 Data Source - Where and/or from whom the data is obtained (e.g. FIPS Pub, name of the organization from which it was purchased, name of the application/system. etc.).

4.8 Domain Codes - the valid values for a data element that uses code values. e.g. a state code data element would have domain values of AK, AL, AR, ...WY.

4.9 Domain Description - text that describes the Domain Code value, e.g. a state code data element with a domain code value of AK would have a corresponding description of ALASKA.

4.10 Common to Logical Data Element Relationship - a common data element name may be assigned to a corresponding logical data element name if the definition is compatible, the logical domain codes are identical or a subset of the common data element=s, and the format (data type) and size (length, precision, scale) of the common element is the same as those of the logical=s corresponding physical data element.

5. **Data Model Information** - logical data model (entity relationship diagram) information downloaded from Erwin objects, e.g. subject areas, entity names, attribute names, domains, keys.

6. **Business Rule Information** - statements that define or constrain some aspect of the business.

7. **Transformation Tool Information** - general data warehouse transformation information.

7.1 COTS Name - the name of the COTS software used by this application for generating a data warehouse, e.g. Informatica.

7.2 COTS Version - the version number of the COTS software.

7.3 Non-COTS Language - the programming or scripting language used by this application for generating a data warehouse.

7.4 Non-COTS Platform - the type of computing hardware and operating system used by this application for generating a data warehouse.

7.5 Contact Name - the contact name for this application=s specific data warehousing information.

7.6 Source DB - the database name of the source tables.

7.7 Target DB - the database name of the target data warehouse table.

8. **Repository Status** - status information about the application data in the repository.

8.1 Inventory Status - the state of completeness of the inventory data for each application listed in the repository; Baselined, Draft, or Work in Progress.
Baselined means that the inventory data has been validated by the owner and stakeholders, further changes will be tracked, the data should be updated as the application changes, and the data should be re-validated at least annually. *Draft* means that the inventory data is believed to be complete and correct, but has not yet been validated by the owner and stakeholders. *Work in Progress* means that the inventory data is believed to be incomplete, incorrect, or both.

8.2 Inventory Version - the version or release of the application at the time it was inventoried.

8.3 Documentation Status - denotes the documentation completeness status (complete/incomplete) for the following types of repository metadata; Database, Element Definitions, Logical to Physical, Common Elements, Business Rules, Domain Codes/Values.

Appendix 4

P.L. 106-554

FY2001 CONSOLIDATED APPROPRIATIONS ACT

Section 515

FY2001 Consolidated Appropriations Act, P.L. 106-554. (This section will be updated when guidelines are published).

Sec. 515. (a) In General. – The Director of the Office of Management and Budget shall, by not later than September 30, 2001, and with public and Federal agency involvement, issue guidelines under sections 3504(d)(1) and 3516 of title 44, United States Code, that provide policy and procedural guidance to Federal agencies for ensuring and maximizing the quality, objectivity, utility, and integrity of information (including statistical information) disseminated by Federal agencies in fulfillment of the purposes and provisions of chapter 35 of title 44, United States Code, commonly referred to as the Paperwork Reduction Act.

(b) Content of Guidelines. - The guidelines under subsection (a) shall -

(1) apply to the sharing by Federal agencies of, and access to, information disseminated by Federal agencies; and

(2) require that each Federal agency to which the guidelines apply -

(A) issue guidelines ensuring and maximizing the quality, objectivity, utility, and integrity of information (including statistical information) disseminated by the agency, by not later than 1 year after the date of issuance of the guidelines under subsection (a);

(B) establish administrative mechanisms allowing affected persons to seek and obtain correction of information maintained and disseminated by the agency that does not comply with the guidelines issued under subsection (a); and

(C) report periodically to the Director -

(i) the number and nature of complaints received by the agency regarding the accuracy of information disseminated by the agency; and

(ii) how such complaints were handled by the agency.